

The Effect of Transformational Leadership and Work Motivation on Employee Performance: Evidence from PT Jasa Marga Tollroad Operator, Surabaya–Gempol Section

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ABSTRACT

This study explores how transformational leadership and work motivation influence employee performance at PT Jasa Marga Tollroad Operator (JMTO), Surabaya–Gempol section. A quantitative explanatory method was applied, involving 46 employees who completed structured questionnaires. The data were analyzed using multiple linear regression. The findings show that both transformational leadership and work motivation significantly improve employee performance, either individually or when combined, with an adjusted R^2 of 0.322. These results highlight that leadership style and motivation are crucial in maintaining service quality within toll road operations. Beyond confirming previous theories, this research also provides fresh evidence from the infrastructure service sector, which is rarely studied. From a practical perspective, the results offer insights for managers to strengthen supervisory leadership skills and design more effective motivation strategies that can drive better employee and organizational performance

INTRODUCTION

Human resource performance has become a central focus in today's era of increasingly competitive global markets (Alghamdi, 2018). Companies are required not only to rely on technology but also on the quality of leadership and employee motivation, which serve as the main driving force of organizational success (Paais & Pattiruhu, 2020). At the national level, the toll road infrastructure sector demands high standards of public service, as toll roads function as the backbone of logistics distribution and community mobility in Indonesia (Yuniar & Hidayat, 2021).

In the context of toll road operations, PT Jasa Marga Tollroad Operator (JMTO) plays a critical role in ensuring smooth service delivery to road users. However, in practice, employee performance is not always consistent. Long working hours, the pressure of public service, and the need for cross-functional coordination often create risks of declining motivation and performance quality (Y. Kim & Park, 2019; Sari et al., 2021; Setiawan & Ayu, 2020). This phenomenon indicates an urgent need to understand the factors that drive improved employee performance.

Previous studies have highlighted the importance of transformational leadership in enhancing performance (C. Wang et al., 2019; D. Wang et al., 2022). Other research has confirmed the role of work motivation in determining employee productivity (Hanaysha, 2021; Tjahjono et al., 2019). Nevertheless, most of these studies were conducted in the manufacturing or education sectors (Albrecht & Marty, 2020; Hanaysha, 2021), while research in the toll road service sector remains limited. This gap is what the present study seeks to address.

Moreover, prior research has often emphasized the direct effect of leadership or motivation separately (Hanaysha, 2021; Imran et al., 2020). Few studies have examined their simultaneous influence in the toll road service context, where employees face intense time pressure and operational risks (M. Kim & Beehr, 2022). This study fills that gap by analyzing the joint influence of transformational leadership and work motivation on employee performance at JMTO.

The urgency of this research lies in JMTO's practical need to improve service quality in line with the minimum service level (SLA) standards set by the government (Rahmawati & Wibowo, 2021; Susanty & Handayani, 2020). The findings are expected to provide empirical foundations for management to design more effective leadership and motivation strategies (Y. Kim & Park, 2019).

The objectives of this study are to examine and analyze: (1) the effect of transformational leadership on employee performance, (2) the effect of work

motivation on employee performance, and (3) the simultaneous effect of both variables on employee performance at PT JMTO, Surabaya–Gempol section.

LITERATURE REVIEW

Transformational Leadership

Transformational leadership is characterized by a leader's ability to inspire, motivate, and intellectually stimulate employees while providing individualized consideration (D. Wang et al., 2022). Leaders who demonstrate these qualities often create a shared vision, build trust, and encourage employees to go beyond their formal responsibilities. Empirical evidence consistently shows that transformational leadership is positively associated with employee performance across different sectors (C. Wang et al., 2019). However, its role in the toll road service industry, which requires real-time responses and operational precision, has not been widely investigated.

Work Motivation

Work motivation refers to the internal and external forces that influence the direction, intensity, and persistence of work-related behavior. Motivation can stem from intrinsic factors such as achievement and recognition or extrinsic factors such as salary and job security (Hanaysha, 2021). Studies indicate that motivated employees tend to demonstrate higher productivity and engagement (Albrecht & Marty, 2017). In service-based industries, motivation also plays a crucial role in maintaining consistent service quality under pressure (Choi et al., 2020).

Employee Performance

Employee performance is defined as the extent to which employees accomplish their assigned tasks in terms of quality, quantity, timeliness, and teamwork (Ingsih & Indarti, 2021). In high-demand environments such as toll road operations, performance is not only about meeting technical requirements but also about ensuring service reliability and customer satisfaction. Prior research shows that performance outcomes are strongly linked to leadership practices and motivation levels (Memon et al., 2020; Purwanto et al., 2021).

Gap Analysis and Research Novelty

Most prior studies have examined the effects of leadership and motivation either separately or within the manufacturing and education sectors. Limited research has explored how these two factors operate simultaneously in the toll road service sector, where employees face unique stressors such as long working hours, immediate decision-making, and safety risks. This study contributes novelty by simultaneously testing the influence of transformational leadership

and work motivation on employee performance in the context of toll road operations in Indonesia.

Hypotheses

H1: Transformational leadership has a positive effect on employee performance.

H2: Work motivation has a positive effect on employee performance.

H3: Transformational leadership and work motivation jointly have a positive effect on employee performance.

These three hypotheses are illustrated in the conceptual framework shown in Figure 1. The framework depicts the relationship between transformational leadership (X1) and work motivation (X2) as independent variables, both of which are expected to positively influence employee performance (Y). This model highlights that employee performance is not shaped by a single factor, but rather through the combined effects of leadership practices and motivational drivers.

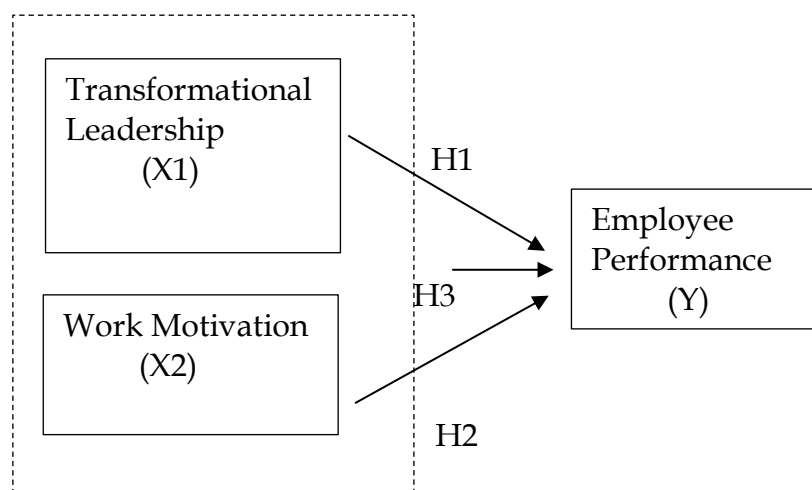


Figure 1. Conceptual Framework of the Study

METHODOLOGY

Research Design

This study employed a quantitative explanatory design with a cross-sectional survey approach. The purpose of this design is to test the influence of transformational leadership and work motivation on employee performance within a single period of observation.

Population and Sample

The population of this research consisted of all employees of PT Jasa Marga Tollroad Operator (JMTO) at the Surabaya–Gempol section. Considering the relatively small size of the population, a saturation sampling technique was used,

resulting in 46 respondents. This approach ensured that every employee had the opportunity to be included, thereby increasing the representativeness of the findings.

Data Collection

Primary data were collected using a structured questionnaire with a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). The questionnaire was developed based on established theories of transformational leadership, work motivation, and employee performance (Hanaysha, 2021; Ingsih & Indarti, 2021; Memon et al., 2020). In addition, observations and company documentation were used to enrich the analysis.

Instrument Testing

Before conducting the main analysis, validity and reliability tests were performed. The results indicated that all items met the criteria for validity at the 0.05 significance level. Reliability was confirmed with Cronbach's alpha values above 0.7 for all variables, which demonstrates internal consistency.

Data Analysis

Data were analyzed using multiple linear regression with the following stages:

1. Classical assumption tests, including normality, multicollinearity, and heteroscedasticity, to ensure the robustness of the regression model.
2. Partial tests (t-tests) to examine the independent effect of each variable.
3. Simultaneous test (F-test) to evaluate the combined effect of transformational leadership and work motivation.
4. Coefficient of determination (Adjusted R²) to assess the proportion of variance in employee performance explained by the model.

All analyses were conducted at a 5 percent significance level using SPSS software.

Research Instrument

The questionnaire consisted of items measuring transformational leadership, work motivation, and employee performance. Each construct was adapted from established theories and previous studies, and all items were measured on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). The operationalization of variables is summarized in Table 1.

Table 1. Research Variables and Indicators

Variable	No	Statement
Transformational Leadership (X1)	1	My supervisor sets a good example in carrying out work.
	2	My supervisor motivates me to perform better.
	3	My supervisor encourages me to think creatively in completing tasks.
	4	My supervisor is always open to ideas and suggestions from employees.
	5	My supervisor pays attention to employees' individual needs and development.
Work Motivation (X2)	6	I feel that the salary and benefits I receive are adequate.
	7	I feel safe and comfortable in carrying out my work.
	8	I have a good relationship with my colleagues.
	9	I feel appreciated for the results of my work.
	10	I have opportunities for personal development in this job.
Employee Performance (Y)	11	I produce work of good quality.
	12	I am able to complete tasks according to the given target.
	13	I always complete my work on time.
	14	I can adapt to changes in my work.
	15	I always work well in a team.

RESEARCH RESULTS

Validity and Reliability Testing

Before hypothesis testing, the validity and reliability of the questionnaire items were examined to ensure the quality of the instrument. Validity testing was carried out using the Pearson product-moment correlation, while reliability was assessed through Cronbach's Alpha coefficients.

Table 2. Presents the Results of the Validity Test for All Questionnaire Items

Variable	Item	r-count	r-table (n=46, $\alpha=0.05$)	Status
Transformational Leadership (X1)	X1.1 - X1.5	0.478 - 0.612	0.291	Valid
Work Motivation (X2)	X2.1 - X2.5	0.505 - 0.699	0.291	Valid
Employee Performance (Y)	Y1 - Y5	0.452 - 0.635	0.291	Valid

Since all r-count values are higher than the r-table (0.291), it can be concluded that each item in the instrument is valid and suitable for measuring the intended construct.

Table 3. Shows the Reliability Coefficients for Each Variable

Variable	Cronbach's Alpha	Threshold	Status
Transformational Leadership (X1)	0.778	>0.70	Reliable
Work Motivation (X2)	0.887	>0.70	Reliable
Employee Performance (Y)	0.844	>0.70	Reliable

The Cronbach's Alpha values for all variables exceed 0.70, indicating that the measurement items are internally consistent and reliable. This means the instrument can be trusted for further analysis.

Classical Assumption Tests

Before performing regression analysis, classical assumption tests were conducted to ensure the validity of the model. The tests included normality, multicollinearity, and heteroscedasticity.

Normality Test

The normality test was performed using a P-P plot of regression-standardized residuals.

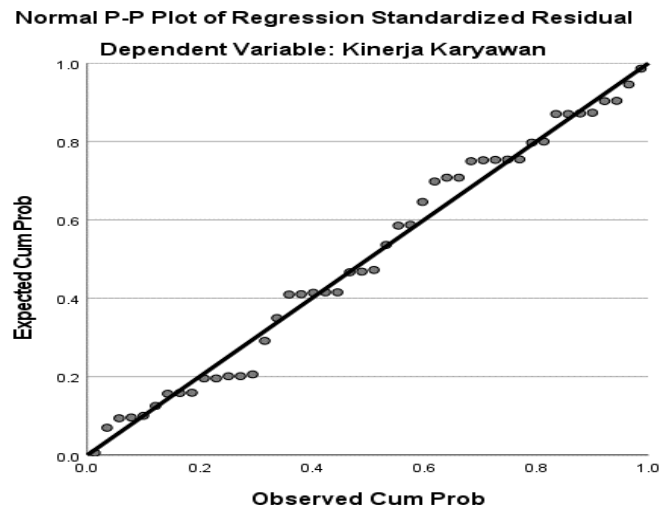


Figure 2. Normal P-P Plot of Regression Standardized Residuals

The residual points are closely aligned with the diagonal line, indicating that the data are normally distributed and satisfy the normality assumption.

Multicollinearity Test

The multicollinearity test was conducted by examining tolerance and VIF values for each independent variable.

Table 4. Shows the Tolerance and VIF Values of the Independent Variables

Variable	Tolerance	VIF	Status
Transformational Leadership (X1)	0.785	1.274	No Multicollinearity
Work Motivation (X2)	0.785	1.274	No Multicollinearity

Since tolerance values are greater than 0.1 and VIF values are below 10, there is no indication of multicollinearity. Thus, the independent variables are free from strong intercorrelations.

Heteroscedasticity Test

The heteroscedasticity test was performed using a scatterplot of standardized residuals.

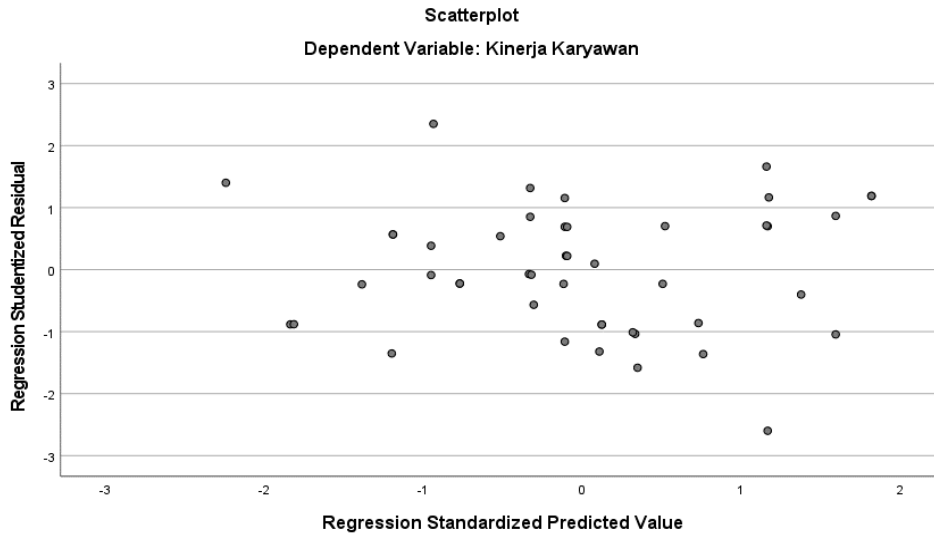


Figure 3. Scatterplot of Standardized Residuals

The residuals are randomly distributed above and below the zero line without forming a clear pattern. This suggests that the model is free from heteroscedasticity problems.

Regression Analysis

After confirming that the model meets the classical assumptions, multiple regression analysis was performed to examine both the partial and simultaneous effects of transformational leadership and work motivation on employee performance.

Partial Test (t-test)

Table 5 presents the regression coefficients for each independent variable tested individually against employee performance.

Table 5. Results of Partial Regression Test (t-test)

Variable	β	t-value	Sig.	Interpretation
Constant	2.421	-	-	-
Transformational Leadership (X1)	0.342	2.885	0.006	Significant
Work Motivation (X2)	0.331	3.217	0.002	Significant

Transformational leadership shows a positive and significant effect on employee performance ($\beta = 0.342$, $p < 0.01$), confirming H1. Work motivation also has a positive and significant effect on performance ($\beta = 0.331$, $p < 0.01$), supporting H2. This indicates that both factors independently contribute to enhancing employee performance.

Simultaneous Test (F-test)

Table 6 summarizes the joint effect of the independent variables on employee performance.

Table 6. Results of Simultaneous Regression Test (F-test)

Statistic	Value	Sig.	Interpretation
F-test	11.685	0.000	Significant

With an F-value of 11.685 and a significance level below 0.001, it is evident that transformational leadership and work motivation together significantly influence employee performance. This finding supports H3 and emphasizes that these two variables, when combined, create stronger effects than when examined separately.

Coefficient of Determination (Adjusted R²)

Table 7 displays the explanatory power of the regression model.

Table 7. Model Summary

R	R ²	Adjusted R ²	Std. Error of the Estimate
0.599	0.359	0.322	2.144

The adjusted R² value of 0.322 indicates that 32.2% of the variance in employee performance can be explained by transformational leadership and work motivation. The remaining 67.8% is likely influenced by other organizational, individual, or contextual factors not included in this study, such as training, workload, or organizational culture.

DISCUSSION

The results of this study confirm that transformational leadership has a positive and significant impact on employee performance. This finding is consistent with Bass and Riggio's (2006) argument that transformational leaders inspire their subordinates through vision, individualized support, and intellectual stimulation. Similarly, Judge and Piccolo (2004) found that transformational leadership strongly correlates with performance outcomes in various organizational contexts. In the case of JMTO, the ability of supervisors to set examples, motivate, and encourage creativity appears crucial in maintaining service quality along the toll road, where employees often operate under time pressure and safety demands.

Work motivation also demonstrates a significant positive effect on employee performance. This aligns with Herzberg's motivation-hygiene theory (1966), which emphasizes that both intrinsic and extrinsic factors influence job satisfaction and productivity. The result also supports Deci and Ryan's (2000) self-determination theory, which stresses the importance of recognition, growth

opportunities, and supportive work environments in sustaining motivation. At JMTO, adequate compensation, a sense of security, and opportunities for self-development likely enhance employee willingness to exert more effort in their daily responsibilities.

Furthermore, the simultaneous effect of transformational leadership and work motivation suggests that a combination of leadership behavior and motivational factors significantly influences employee performance. Walumbwa et al. (2008) also noted that effective leadership amplifies employee motivation, creating a synergistic effect on performance outcomes. The model's explanatory power (Adjusted $R^2 = 0.322$) suggests that while leadership and motivation are important drivers, other organizational variables, such as workload, safety culture, and training systems, may also play significant roles.

Theoretically, this study contributes to the existing body of literature that links leadership and motivation to performance, particularly in the underexplored context of toll road service operations. Practically, the findings underscore the importance for JMTO management to continually develop transformational leadership skills among supervisors and design motivation systems that address both financial and non-financial needs of employees.

CONCLUSIONS

This study aims to investigate the impact of transformational leadership and work motivation on employee performance at the Surabaya-Gempol Toll Road (JMTO). The results indicate that both play a crucial role. Leaders who inspire, support, and encourage creativity have been shown to improve employee performance significantly. Meanwhile, strong motivation, whether through material or non-material rewards, helps employees consistently achieve work targets. Together, these two factors account for approximately half of the performance improvement, indicating that leadership and motivation are key, though not the sole, factors in organizational success.

Theoretically, this study offers a comprehensive discussion of leadership and motivation, with a focus on their application to the toll road service sector. This sector has been rarely addressed in previous studies. Practically, these findings suggest that capability development, leadership, and the implementation of motivational systems are not merely complementary strategies but are essential for maintaining service quality in a demanding work environment such as toll road operations.

FUTURE RESEARCH

This study has several limitations that open opportunities for future research. First, the sample size was relatively small, comprising only 46 employees in one section of a toll road, which limits the generalizability of the findings. Future studies could expand the scope to multiple toll road sections or include employees from different regions to provide broader insights. Second, the research design employed a cross-sectional approach, capturing conditions at a single point in time. A longitudinal approach would enable scholars to investigate how leadership practices and motivation impact performance dynamics over the long term. Third, this study focused only on two independent variables, while employee performance is likely influenced by other organizational factors such as workload, organizational culture, job satisfaction, or training programs. Incorporating these additional variables, either as mediators or moderators, could provide a more comprehensive understanding of the factors that determine performance in service-based industries.

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